Characterization of Commercial Building Appliances

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Commercial appliances consume considerable amounts of energy; in fact, appliances are about equivalent to other major end uses such as space heating, space cooling, or lighting in terms of energy consumption in the commercial sector. In total, energy-using equipment in commercial buildings consume about 13 quads (quadrillion Btu, or 10^{15} Btu) of primary energy each year. Of this consumption, nearly three quads of primary energy are consumed each year by appliances, or 22 percent of the total.

The highly detailed derivation of this three quad estimate sets a new benchmark by which to measure consumption and provides focused direction for potential actions. With 1990 as a base year, the main energy consumers within commercial appliances are water heating, refrigeration, and cooking. These three groups consume over 80 percent of the appliance energy! Although previous energy conservation efforts have focused on HVAC and lighting, this new consumption data places appliances in a new perspective as a major end use group, worthy of major attention. The commercial appliance types which are the most significant energy consumers are:

	TBtu
❋ **Water Heating** (including swimming pool heating and laundry water heating)	933
❋ **Refrigeration** (including vending machines and water coolers)	896
❋ **Cooking** (ovens, fryers, etc.)	540
❋ **Office Equipment** (copies, fax machines, etc.)	335
❋ **Laundry** (washers, dryers, etc.)	146
❋ **Non-Office Electronics** (medical, cash registers, etc.)	43

The energy savings potential of commercial appliances represents a major opportunity for energy savings among end-uses. Up to 50 percent of the present appliance energy consumption can be saved (assuming 100 percent penetration of the most energy-efficient products). The energy savings are concentrated in two appliance types: water heating and refrigeration, which account for about 75 percent of the total savings. Within the water heating and refrigeration groups, the energy consumption can be reduced with more efficient technologies by 66 percent and 49 percent, respectively. Cooking, office equipment, and laundry also contribute to the 1.4 quads of technical potential, but at lower levels.

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Where to find this report...

The full report *Characterization of Commercial Building Appliances* is available from:

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